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M 135.03: Mathematics for K-8 Teachers I

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M 135: Mathematics for Elementary Teachers, Course I

Spring, 2014

INSTRUCTOR: Ke Wu

Email: ke.wu@mso.umt.edu

Office: Math Building room 201

Office Hours: Mondays and Wednesdays 10:00-11:00AM and by appointment

Course coordinator: Bonnie Spence, bonnie.spence@mso.umt.edu

CLASS TIME/LOCATION: Mondays and Wednesdays: 5:10-7:30 P.M. LA 235

PREREQUISITES: Open to Elementary Education or (pre-ED) majors **only**: Successful completion of M095 (C or higher) or appropriate score on ALEKS (level 4).

TEXT: *A Problem Solving Approach to Mathematics for Elementary School Teachers* (11th Ed.), by Billstein, Libeskind, & Lott, with MyMathLab access.

MATERIALS: Notebook, calculator, pencil, graph paper, textbook, and MyMathLab account

COURSE CONTENT: The course is designed to deepen mathematics content knowledge of elementary education majored students within an environment that models and pedagogy future teachers are expected to implement. In this integrated content and methods class, students will learn mathematics within an environment that involves problem solving, connections, communication (both in oral and written form), reasoning and representation. Students will become familiar with the use of manipulatives to initiate learning, and to use different problem-solving strategies and mathematical modeling to approach real world problems involving mathematical concepts such as ratio, proportion, and percent. Students will learn to use probability and statistics to solve problems.

Part I of this course will trace the historical development of our numeration system. Students will explore and model the sets of numbers in the system: natural numbers, integers, rational numbers, and real numbers. Part II of the course will focus on using probability and statistics to solve problems. Students will use content from Part I as tools for exploring mathematical concepts in Part II of the course.

LEARNING GOALS: Upon successful completion of this course students should be able

1. To identify and solve problems in elementary mathematics.
2. To model the number systems: natural numbers, integers, rationals and reals.
3. To become familiar with the use of manipulatives to enact arithmetic operations.
4. To apply basic problem-solving strategies to ratio, proportion and percent problems.
5. To use mathematical modeling and basic algebra to approach real world problems.
6. To solve problems using probability and statistics including designing simulations.

7. To communicate mathematics both in oral and written form.

COURSE EXPECTATIONS:

Homework: Homework will consist of textbook problems, reading, extended class activities, and supplemental handouts. All assignments must be completed by the given deadline. Assignments are assigned regularly. Written homework will be collected occasionally.

Textbook problems will be selected by the instructor. Students are expected to show work in an organized manner. Grading will be based on the quality of work and use of methods that leads to a solution. All work should be neatly labeled with your first and last name, course number, page number or identifiable assignment title. Leave space between problems for instructor comments.

Textbook problems can also be used as a self-assessment for understanding. Answers to selected "A" problems can be found in the back of the student text. If "A" problems are used as part of an assignment, students are expected to check their answers before coming to class.

Reading the textbook is expected. The examples should complement the class lecture notes (not an exact repetition) thus giving you further examples and assistance in understanding a concept. When reading, carefully study examples and make note of any steps or explanations that are not clear. Come in for help or ask at appropriate times in class for further explanation.

Extended Class Activities and Supplemental handouts will be used to complement your learning experience. At the end of an in-class activity you may be asked to finish work at home or given a problem or activity to complete on your own. Students may be asked to present their solutions to the class or turn them in upon return the deadline.

Three Exams and One Quiz: **Exam 1** (chapter 1 & 2); **Exam 2** (chapter 3, 4, & 5), **Exam 3** (chapter 6, 7, & 8), and **Quiz 1** (chapter 9 & 10). Exams and quiz will be given as indicated on the syllabus schedule. When extenuating circumstances prevent a student from taking an exam at the scheduled time, the student must contact the instructor **PRIOR** to the time of the exam to announce their absence. Brief and occasional absences are excused only for reasons of illness, injury, family emergency, or a University sponsored activity. Arrangements for a make-up exam must occur within 1 week of the scheduled exam date. Failure to do so will result in a score of 0 for the exam.

Final Exam: A comprehensive final exam will be given on **Monday, May 12th, 5:30 – 7:30P.M** in the same classroom that we meet during the semester. The final exam schedule is listed in the university schedule and the time will not be changed. Make your travel arrangement based on the scheduled final exams.

Essential Skills Test: All students enrolled in M135 will be required to pass an Essential Skills test. The twelve-question exam tests student prerequisite fluency with whole number, fraction, and decimal operations, as well as solving equations for a single variable.

First exam date: Wednesday, February 5th (given in class)

Final date to pass: Wednesday, March 12th

Required score: 90% or higher

A student not passing the exam is required to meet with his or her professor to discuss test results and schedule a retake exam. A student may retake the exam multiple times during the semester until a passing score of 90% or higher is obtained. **A passing score must be reached on or before Wednesday, March 12th.** A student who does not pass the Essential Skills Test will earn

at most a D in the course if enrolled for a traditional letter grade or a grade of NC (no credit) if enrolled in a credit/no credit option.

Students may find the following resources helpful in improving their essential skills:

- MyMathLab, Go to Tools for Success tab, scroll to Review and view the [Basic Math Review Card](#)
*MyMathLab also has video instruction for related sections in your textbook that you may find helpful.
- Khan Academy practice and video instruction www.khanacademy.org
- IXL Math www.ixl.com
- BuzzMath www.Buzzmath.com

** Late homework will not be accepted. No makeup test/exam will be given without permission prior to the schedule test/exam.*

Attendance/participation: This class has a special schedule to meet in the evenings for 2.5 hours two nights per week instead of the regular five times per week each time 50 minutes. We will spend significant amount of in-class time on activities and these activities will be reflected on tests/quiz/final exam. Many of the activities are hands-on and difficult to replicate if you are absent. Thus Class attendance and participation are important.

Cell phones: Cells phones are not to be used at all during class. All phones are to be placed in a backpack or bag, not in the laps of students or on the desks. Your class participation depends on your full attention for the entire class period. If you have a situation that necessitates checking your phone during class (such as a sick child at home) get this approved at the beginning of class.

Attendance is based on a 10 point scale and is included as part of your extended assignments grade. After 3 absences the attendance grade will be reduced 1 point for each additional absence. Extreme situations will be considered on an individual basis.

GRADING SCALE:

The grading distribution will be approximately as follow:

Homework	30%
Attendance/participation	10%
Exams/quiz	45%
Final exam	15%
Essential Skills Test	Required to Pass

Final Grade Grading Scale:

93 – 100%	A	90 – 92.9%	A-		
87 – 89.9%	B+	83 – 86.9%	B	80 – 82.9%	B-
77 – 79.9%	C+	73 – 76.9%	C	70 – 72.9%	C-
67 – 69.9%	D+	63 – 66.9%	D	60 – 62.9%	D-
Below 60%	F				

ADMINISTRATIVE POLICY: You must earn a grade of C- or better in this course to pass the requirement in the College of Education. You may chance to CR/NC up to the last day of class

and you will receive credit with a grade of D- or better. However, if you choose this option the grade cannot be counted toward the College of Education requirement nor the UM graduate requirement.

MATH HELP: It is your responsibility to seek help quickly when not understanding a concept. Math help is available during my office hours and in the Math Center located in the Mansfield Library. The Mathematics Center offers free walk-in assistance to students enrolled in mathematics courses. It is a resource for assistance in mathematics, but is not a one-on-one tutoring center.

CLASSROOM AND TESTING ACCOMMODATIONS: Please set up an appointment to meet with me to discuss reasonable modifications. The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students (DSS). “Reasonable” means the University permits no fundamental alterations of academic standards or retroactive modifications. For more information, please consult <http://www.umt.edu/disability>.

STUDENT CONDUCT CODE: All students need to be familiar with the Student Conduct Code. You can find it in the “A to Z Index” on the UM home page. All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University.